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EXAMINER	
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DATE MAILED: 12/02/98

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 9-15-98 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), 0 days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☐ Notice of Draftsman's Patent Drawing Review, PTO-948.
3. ☒ Notice of Art Cited by Applicant, PTO-1449.
4. ☐ Notice of Informal Patent Application, PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ _____.

Part II SUMMARY OF ACTION

1. ☒ Claims 2-10, 14-19, 28-38 are pending in the application.
   Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 2-10, 14-19, 28-38 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____. has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____ ; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

1) Claims 7 to 10, 14 to 19 and 28 to 38 are pending in the instant application. Claims 7, 10, 14 and 15 have been amended, claims 1 to 6, 11 to 13 and 20 to 27 have been canceled and claims 28 to 35 have been added as requested by Applicant in Paper Number 9, filed 15 September of 1998.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2) Claims 7 to 10, 14, 16 to 19, 28, 29 and 32 to 35 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The instant specification does not provide the guidance needed to make and use an "RTD" polypeptide comprising all or a specifically identified functional portion of the amino acid sequence presented in SEQ ID NO:1 of the instant application. Claim 7 encompasses a chimeric protein containing an "RTD" polypeptide having at least (?) about 80% amino acid sequence identity with residues 1 to 386 of SEQ ID NO:1. This claim encompasses an

"RTD polypeptide", whether synthetic or naturally occurring, having an amino acid sequence which can deviate from the disclosed sequence by as many as 77 out of 386 residues. The instant specification, however, only discloses a single naturally occurring "RTD polypeptide". This claim encompasses at least 20^{77} material embodiments of "RTD polypeptide" whereas the instant

specification only describes one. The breadth of the claim is not the issue, however. *In re Fisher*, 427 F.2d 833, 166 USPQ 18 (CCPA 1970), held that

> "Inventor should be allowed to dominate future patentable inventions of others where those inventions were based in some way on his teachings, since such improvements while unobvious from his teachings, are still within his contribution, since improvement was made possible by his work; however, he must not be permitted to achieve this dominance by claims which are insufficiently supported and, hence, not in compliance with first paragraph of 35 U.S.C. 112; that paragraph requires that scope of claims must bear a reasonable correlation to scope of enablement provided by specification to persons of ordinary skill in the art; in cases involving predictable factors, such as mechanical or electrical elements, a single embodiment provides broad enablement in the sense that, once imagined, other embodiments can be made without difficulty and their performance characteristics predicted by resort to known scientific law; in cases involving unpredictable factors, such as most chemical reactions and physiological activity, scope of enablement varies inversely with degree of unpredictability of factors involved."

In the instant case, because the instant specification does not identify those residues in the amino acid sequence presented in SEQ ID NO:1 of the instant application which are critical to the functional and structural integrity of an "RTD polypeptide" and those residues which are expendable or substitutable a practitioner of the art of molecular biology can not alter that sequence and predict "by resort to known scientific law" if the resulting protein will function as an "RTD polypeptide".

The text in the last paragraph on page 11 of the instant specification states that the term "RTD polypeptide" is intended to encompass polypeptides "from a variety of mammals, including humans". The instant specification, however, only discloses an "RTD polypeptide" of human origin. In the decision of *The Regents of the University of California v. Eli Lilly and Company*, 43 USPQ2d 1398 (CAFC 1997), the court held that:

> "To fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention." Lockwood v. American Airlines, Inc. , 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (1997); In re Gosteli, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (" [T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention." Lockwood , 107 F.3d at 1572, 41 USPQ2d at 1966.
>
> An adequate written description of a DNA, such as the cDNA of the recombinant plasmids and microorganisms of the '525 patent, "requires a precise definition, such as by structure, formula, chemical name, or physical properties," not a mere wish or plan for obtaining the claimed chemical invention. Fiers v. Revel , 984 F.2d 1164, 1171, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993). Accordingly, "an adequate written description of a DNA requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it; what is required is a description of the DNA itself." Id. at 1170, 25 USPQ2d at 1606.

To produce a chimeric protein comprising a mammalian "RTD polypeptide" one needs an isolated DNA encoding that polypeptide. Whereas the instant specification provides a detailed description of an isolated DNA encoding a particular human "RTD polypeptide" having very specific physical and structural properties, the instant specification does not provide a structural formula which one would expect to be definitive of all "RTD polypeptides". Whereas the instant specification may identify some properties which are expected to be common to all mammalian "RTD polypeptides", it does not identify those defining structural elements which provide the functional and structural properties of an "RTD polypeptide" having other than the amino acid sequence presented in SEQ ID NO:1 of the instant application..

3) Claims 33 to 35 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. These claim are drawn to a cell which comprises a cell. The instant specification does not provided the guidance needed to produce a cell which comprises a cell.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4) Claims 7 to 10, 14 to 19 and 28 to 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4.1) Claims 7 to 10, 14 to 19 and 28 to 38 are vague and indefinite in the recitation of either of the terms "RTD polypeptide" or "tumor necrosis factor receptor homolog". Because the instant specification does not identify that property or combination of properties which is unique to and, therefore, definitive of an "RTD polypeptide" or a "tumor necrosis factor receptor homolog" it is not possible for a practitioner to determine if a polypeptide which otherwise meets the material limitations of a claim are included or excluded by either of these terms.

4.2) Claims 7 to 10, 14 to 19, 28 to 31 and 33 to 38 are vague and indefinite because they recite the terms "about" and "sequence identity" and the algorithm to be employed in the determination of the value of the term "sequence identity" has not been disclosed. If gaps are required to optimally align two sequences for the purpose of determining if a particular nucleic

acid is encompassed by the instant claims, how is the gap to be assessed in determining identity? The ambiguity is best shown by example: consider the two sequences, ABCDEF and ABEF. These could be compared in four ways:

ABCDEF 4/6 = 67% AB EF	ABCDEF 2/6 = 33% ABEF
AB EF 4/4 = 100% ABCDEF	ABEF 2/4 = 50% ABCDEF

Because the value of the term "sequence identity" is dependant upon which algorithm is employed to determine this value and Applicant has failed to recite the particular algorithm by which this value is to be determined in either the instant specification or the claims, this term is vague and indefinite.

4.3) Claims 7 and 14 are vague and indefinite in so far as section "(b)" therein recites "an extracellular domain sequence of RTD polypeptide" in the complete absence of any structural limitations. Claims 8 to 10, 15 to 19, 28 to 31 and 33 to 35 are vague and indefinite in so far as they depend from either of claim 7 or 14 for this element.

5) The information disclosure statement filed 22 May of 1998 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

6) The prior art of record did not disclose or suggest a nucleic acid encoding a chimeric protein comprising the amino acid sequence depicted in SEQ Id NO:1 of the instant application or the protein encoded thereby.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John D. Ulm whose telephone number is (703) 308-4008. The examiner can normally be reached on Monday through Friday from 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lila Feisee can be reached at (703) 308-2731.

Official papers filed by fax should be directed to (703) 308-4242.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

JOHN ULM
PRIMARY EXAMINER
GROUP 1800